



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,620	08/11/2003	Manus P. Henry	02052-079004	2449
26171	7590	11/17/2004	EXAMINER	
FISH & RICHARDSON P.C. 1425 K STREET, N.W. 11TH FLOOR WASHINGTON, DC 20005-3500			BARBEE, MANUEL L	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/637,620	HENRY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Manuel L. Barbee	2857	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-14 and 16-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-57 is/are allowed.
- 6) ☒ Claim(s) 58, 59, 61, 62 and 64 is/are rejected.
- 7) ☒ Claim(s) 60 and 63 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/7/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 7 April 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but some of the references referred to therein have not been considered.

### ***Drawings***

2. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 58, 59, 61, 62 and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Corwon et al. (US Patent No. 4,852,410).

With regard to an input module to receive a sensor signal related to fluid flow and processing the signal to determine sensor signal characteristics and output drive signal

Art Unit: 2857

characteristics for a drive signal, an output module operable to output the drive signal to the flow tube and a control system to modify the drive signal and thereby maintain oscillation of the flow tube during a transition from an empty state to a full state, as shown in claim 58, Corwon et al. teach a coriolis-type mass flow meter that has two sensors and a which are used to determine the mass flow rate and to modify the drive signal to keep the tubes oscillating at a resonant frequency when the tube is empty and when fluid flows through the conduit (col. 8, line 3 - col. 9, line 18; Fig.1 driver 46, sensors 48 and 50; Figs. 8-10). With regard to modifying the drive signal to maintain oscillation of the flow tube during a transition of the flowtube from a full state to an empty state, as shown in claim 58, Corwon et al. teach maintaining the resonant frequency of the flowtube during an empty state and a fluid flowing state (col. 6, line 26 - col. 7, line 25, col. 8, line 3 - col. 9, line 18).

With regard to maintaining oscillation of a flowtube associated with a flowmeter during an empty state and an onset of fluid flow and determining a property of fluid flow, as shown in claim 61, Corwon et al. teach maintaining a resonant frequency oscillation of a flowtube when the flow tube is empty and when fluid flows through the tube (col. 6, line 26 - col. 7, line 25; col. 8, line 3 - col. 9, line 18; Fig. 1 driver 46, sensors 48 and 50; Figs. 8-10). With regard to processing the sensor to determine sensor signal characteristics, drive gain and adjusting the drive gain to maintain oscillation, Corwon et al. teach maintaining a resonant frequency of the flowtube by adjusting the gain using the sensor signals (col. 8, line 3-48; Fig. 8). With regard to maintaining oscillation of the flowtube when the flowtube is substantially filled by the fluid flow, as shown in claim 64,

Art Unit: 2857

Corwon et al. teach maintaining the resonant frequency of the conduit when fluid flows through the conduit (col. 6, line 26 - col. 7, line 25).

***Allowable Subject Matter***

4. Claims 11-14 and 16-57 are allowed.
5. Claims 60 and 63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches a controller for a flowmeter that includes an input module, a signal processing system, an output module and a control system to modify the drive signal and maintain oscillation of the flowtube during a time in which an apparent density of the fluid flow, as determined by the signal processing system based on the sensor signal characteristics, drops by more than ten percent in response to an introduction of gas within the fluid flow, as shown in claim 1. None of the prior art teaches a method for operating an flowmeter that includes receiving a sensor signal, processing the sensor signal, determining drive signal characteristics, and a flow transition characterized by the drive gain rising in conjunction with a reduction in an apparent density of the fluid flow and transitioning the flowmeter from a first state in which a substantially non-aerated fluid flow exists in the flowtube to a second state in which an aerated fluid flow exists in the flow tube based on the flow transition, as shown in claim 18. None of the prior art teaches a flowmeter that includes a vibratable conduit, a driver and a control and measurement system that receives a first signal during non-

aerated flow and a second sensor signal upon introduction of gas to the fluid flow and generates a second drive signal to update the drive gain in response to the introduction of gas and wherein the drive gain update rate is at least five percent of the drive frequency, as shown in claims 25 and 38. None of the prior art teaches a flowmeter that includes an input module, a signal processing system and a control system to modify the drive signal and maintain oscillation of the flowtube and incrementally changes the drive gain at least once per forty cycles or where the response time is less than 100 ms and an output module, as shown in claims 32 and 47.

### ***Response to Arguments***

7. Applicant's arguments filed 8 October 2004 have been fully considered but they are not fully persuasive.

Applicants arguments with regard to claims 11-14 and 16-57 were sufficient to overcome the rejections under 35 USC 112.

Applicant states that reference to portions of Fig. 4 as "conventional" does not constitute a stipulation by Applicant that FIG. 4 or its description within Applicant's specification, constitutes prior art under 35 U.S.C. 102 or 103. However, on page 15, lines 7 and 8 of the specification it is state that "Fig. 4 illustrates an analog control system 400 of a traditional mass flowmeter." Since Fig. 4 illustrates one part of a traditional device, it appears that entire Figure contains only what is old.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Smith (US Patent No. 4,187,721) teaches a method of and

structure for flow measurement that includes maintaining oscillation when there is no flow.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

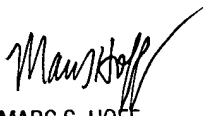
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2857

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mlb  
November 4, 2004

  
MARC S. HOFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800